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RELATIVE COST

OF

NATURAL GAS, SOFT COAL, COAL OIL, GASOLINE

AND

ELECTRICITY

FOR COOKING

Based on

TESTS MADE IN THE LABORATORY

of the

DEPARTMENT OF HOME ECONOMICS

THE OHIO STATE UNIVERSITY

Columbus, Ohio

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Under the Direction

of

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MAY AND JUNE

1917

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Introduction

The following gives the details pertaining to a series of tests made in the Laboratory of the Department of Home Economics, Ohio State University, Columbus, Ohio, to determine the relative cost of natural gas, soft coal, coal oil, gasoline, and electricity, for cooking. The data has been arranged and is presented by the undersigned.

All quantities of food and fuel were accurately weighed or measured. After the usual preliminary tests, a number of meals (each sufficient for six people) were cooked on ordinary standard natural gas, soft coal, coal oil, gasoline, and electric ranges. Since the object of the series of tests was primarily to secure data such as would prevail in ordinary kitchen operation, rather than fancy results, none of the ranges were in any way specially prepared for the tests.

The natural gas and electricity were measured in meters which were proved for accuracy. The soft coal, coal oil, and gasoline quantities were determined by scale weights. No more fuel was used than necessary to do the specific work, except that in the case of coal after the cooking operation was over the fire was simply allowed to "die out." In burning 67 lbs. 11 oz. Ohio soft coal, 12 lbs. 11 oz. of ashes were left.

Thirty-two meals, each for six people, or the equivalent of 192 services were prepared from groceries and supplies costing \$39.92, or 20.8c per person served. Cost data pertaining to three of the typical meals cooked with the five different fuels in this test are shown on pages 2, 3 and 4. On page 5 is given a comparison of the cost of various fuels required to bake four loaves of white wheat bread. The relative fuel cost for the five different fuels in cooking the same meal are shown in graphical form on page 6.

Samuel S. Wyer

Columbus, Ohio
June 20, 1917

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JUL 7 1917

BREAKFAST FOR SIX

June 7, 1917

FOOD				FUELS					
	Quantity	Unit Price in Cents	Cost of Dish in Cents	Natural Gas at 40c per 1000 cu. ft.	Soft Coal at \$6.50 per ton	Coal Oil at 15c per Gallon	Gasoline at 27c per Gallon	Electricity at 3c per K. W. hour	Time required to cook with respective fuels
Stewed Rhubarb—	1 lb.	2.6	5.6	10 min.	12 min.	10 min.	10 min.	6 min.	
Rhubarb	1/2 cup	11.	2.	25 "	37 "	40 "	52 "	37 "	"
Sugar	1 cup	10.	31.4	7 "	10 "	22 "	20 "	7 "	"
Rolled Oats	11 oz.	45.	18.5	4 "	8 "	4 "	8 "	2 "	"
Bacon	1 1/2 doz.	37.	12.	13 "	23 "	10 "	10 "	16 "	"
Eggs	3/4 loaf	15.	9.	21 "	28 "	48 "	27 "	12 "	"
Toast	1 lb.	46.	4.						
Butter	2/3 cup	30.	10.						
Coffee (boiled)	1/2 pint	10.	1.4						
Cream	1/2 lb.	11.							
Sugar									
Total cost of food			93.9	10 cu. ft.	10 lb.	1 lb.	14 oz.	1 K. W. hour	
Quantity fuel for cooking meal					1 oz.	1.5 oz.			
Cost, in cents, of fuel for cooking meal					3.45	2.5.	3.6.	3.	
Total meal cost in cents				94.3	97.35	96.4	97.5	96.9	
Cost, in cents, of meal per person served				15.7	16.2	16.	16.2	16.1	
Per cent of total meal cost represented by each fuel.				.42%	3.56%	2.59%	3.69%	3.09%	

LUNCHEON FOR SIX

May 30, 1917

	FOOD			FUELS					Time required to cook with respect to fuels
	Quantity	Unit Price in Cents	Cost of Dish in Cents	Natural Gas at 40c per 1000 cu. ft.	Soft Coal at \$6.50 per ton	Coal Oil at 15c per Gallon	Gasoline at 27c per Gallon	Electricity at 3c per K. W. hour	
Clear tomato soup.....	3 cups	17.5	27.6	13 min.	28 min.	12 min.	16 min.	18 min.	
Croutons.....	1 ½ cups		1.5						
Baked beans—beans.....	1 lb.	22.	32.	4 hrs. 1 min.	4 hrs. 27 min.	4 hrs. 15 min.	3 hrs. 59 min.	10 min. top 3 hrs. 46 min. oven	
Pork.....	5.6 oz.	28.							
Cold slaw.....	9 oz.	14.	7.4						
Corn bread—Meal.....	2 cups	6.	12.9						
Milk.....	1 ½ cups	6.	9.						
Butter.....	½ lb.	46.	3.7						
Coffee.....	⅝ cup	30.	10.						
Cream.....	1 ½ pint	10.	1.4						
Sugar.....	⅛ lb.	11.							
Total cost of food.....			105.5						
Quantity fuel for cooking meal.....				24 cu. ft.	11 lbs. 9 oz.	2 lbs. 7 oz.	1 lb. 8.5 oz.	3 K W. hour	
Cost, in cents, of fuel for cooking meal.....				.96	3.75	5.62	6.36	9.	
Total meal cost in cents.....				106.46	109.25	111.1	111.86	114.5	
Cost, in cents, of meal per person served.....				17.74	18.2	18.5	18.6	19.	
Per cent of total meal cost represented by each fuel.....				.9%	3.4%	5.0%	5.6%	7.8%	

DINNER FOR SIX

June 7, 1917

	FOOD			FUELS				
	Quantity	Unit Price in Cents	Cost of Dish in Cents	Natural Gas at 40c per 1000 cu. ft.	Soft Coal at \$6.50 per ton	Coal Oil at 15c per Gallon	Gasoline at 27c per Gallon	Electricity at 3c per K. W. hour
Swiss steak	2 lb.	30.	60.	14 min. top 95 min. oven 1 hr. 17 min. 30 "	19 min. top 60 min. oven 1 hr. 8 min. 25 "	18 min. top 85 min. oven 1 hr. 9 min. 45 "	15 min. top 90 min. oven 1 hr. 25 min. 33 "	8 min. top 2 hrs. oven 1 hr. 40 min. 38 "
Escalloped potatoes	2 lb.	8.	19.					
Milk	1 lb.	5.	12.					
Spinach (Butter)	1 doz.	10.	9.					
Bread—rolls	1 lb.	46.	9.					
Butter	$\frac{1}{8}$ lb.	13.	20.	1 hr. 26 min. 14 "	2 hrs. 18 min. 15 "	2 hrs. 8 min. 20 "	2 hrs. 28 min. 15 "	2 hrs. 20 min. 13 "
Rice pudding	30.	9.	3.7					
Coffee—boiled	$\frac{5}{8}$ cup	10.	10.					
Cream	$\frac{1}{2}$ pint	11.	1.4					
Sugar	$\frac{1}{8}$ lb.							
Total cost of food			144.1					
Quantity fuel for cooking meal				22 cu. ft.	7 lb. 12.5 oz. 2.5	2 lb. 5.5 oz. 5.4	1 lb. 2 oz. 4.6	1 $\frac{5}{8}$ K. W. hours 5.
Cost, in cents, of fuel for cooking meal				.88	146.6	149.5	148.7	149.
Total meal cost in cents				144.9	24.4	24.9	24.7	24.8
Cost, in cents, of meal per person served				24.1	1.7%	3.6%	3%	3.3%
Per cent of total meal cost represented by each fuel.				.5%				

Time required to cook with respective fuels

Cost Data

COMPARISON OF FUELS IN BAKING FOUR LOAVES WHITE WHEAT BREAD

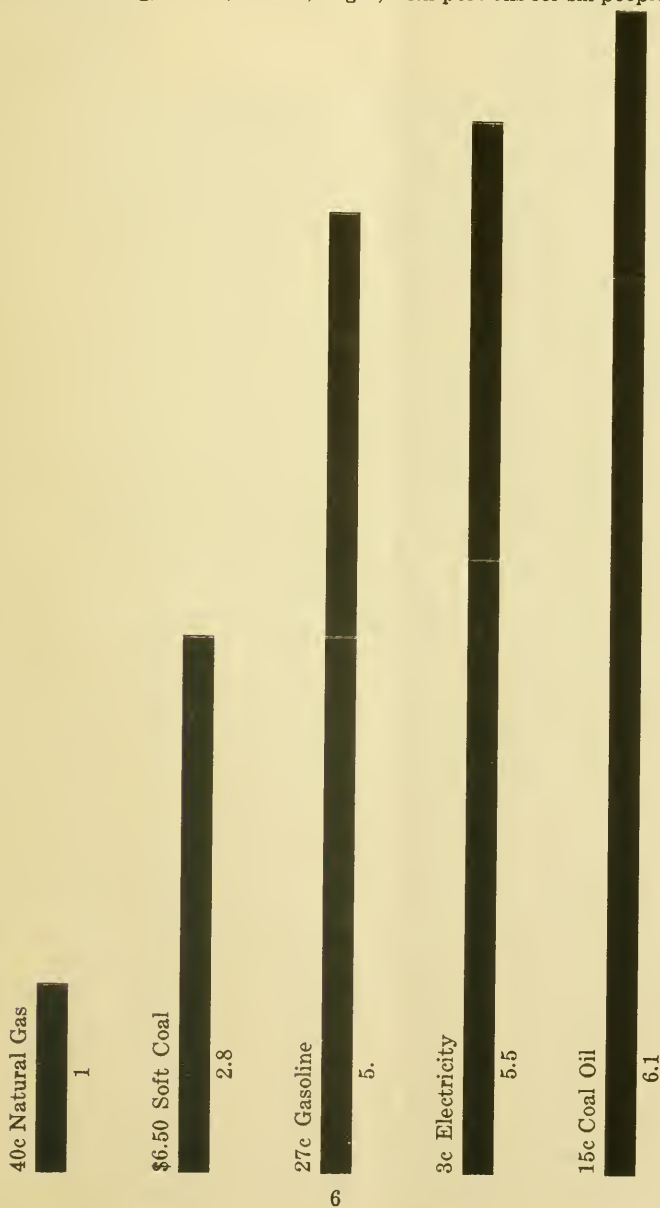
	Natural Gas at 40c per 1000 cu. ft.	Soft Coal at \$6.50 per ton	Coal Oil at 15c per Gallon	Gasoline at 27c per Gallon	Electricity at 3c per K. W. hour
Weight of each loaf before baking.....	1 lb.	1 lb.	1 lb.	1 lb.	1 lb.
Weight of each loaf after baking.....	5.5 oz.	5.5 oz.	5.5 oz.	5.5 oz.	5.5 oz.
Time, in minutes, for pre-heating oven.....	1 lb.	1 lb.	1 lb.	1 lb.	1 lb.
Time, in minutes, for baking.....	2.75 oz.	2.75 oz.	3 oz.	2.75 oz.	2.75 oz.
Amount fuel used.....	8	20	20	10	20
	45	45	45	45	45
	10 cu. ft.	6.5 lb.	6.75 oz.	7 oz.	1 K. W.
Cost of fuel, in cents.....	0.4	2.1	0.97	1.8	hour
Cost of material in four loaves, in cents.....	32.	32.	32.	32.	3.
Total cost of four loaves, in cents.....	32.4	34.1	32.97	33.8	32.
Total cost per loaf, in cents.....	8.1	8.52	8.24	8.45	35.
Per cent of total cost of four loaves represented by each fuel.....	1.2%	6.9%	3.9%	5.3%	8.7%

RELATIVE COST

OF

VARIOUS FUELS FOR COOKING DINNER

Consisting of Swiss Steak, Escalloped Potatoes, Spinach, Bread, Butter, Rice Pudding, Coffee, Cream, Sugar, with portions for six people.



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